

**INTERNATIONAL SEARCH REPORT**

International application No PCT/GB2005/050219
---

**A. CLASSIFICATION OF SUBJECT MATTER**  
INV. G06F17/16 G09G3/32

According to International Patent Classification (IPC) or to both national classification and IPC

**B. FIELDS SEARCHED**

Minimum documentation searched (classification system followed by classification symbols)  
G06F G09G

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EPO-Internal, INSPEC

**C. DOCUMENTS CONSIDERED TO BE RELEVANT**

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	LIU W ET AL: "Existing and new algorithms for non-negative matrix factorization" FINAL REPORT CS 383C PROJECT, DEPARTEMENT OF COMPUTER SCIENCE, UNIVERSITY OF TEXAS, AUSTIN, USA, [Online] 26 August 2004 (2004-08-26), XP002468343 Retrieved from the Internet: URL: <a href="http://web.archive.org/web/20040826233249/www.cs.utexas.edu/users/liuwg/383CProject/final_report.pdf">http://web.archive.org/web/20040826233249/www.cs.utexas.edu/users/liuwg/383CProject/final_report.pdf</a> [retrieved on 2008-02-06] cited in the application section 1 section 2, point (1)	1-17, 19-35, 49-51
A	cited in the application section 1 section 2, point (1) ----- -/-	18, 36-48

Further documents are listed in the continuation of Box C.

See patent family annex.

\* Special categories of cited documents :

- \*A\* document defining the general state of the art which is not considered to be of particular relevance
- \*E\* earlier document but published on or after the International filing date
- \*L\* document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
- \*O\* document referring to an oral disclosure, use, exhibition or other means
- \*P\* document published prior to the International filing date but later than the priority date claimed

\*T\* later document published after the International filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

\*X\* document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

\*Y\* document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art

\*&\* document member of the same patent family

Date of the actual completion of the International search

Date of mailing of the International search report

11 February 2008

20/02/2008

Name and mailing address of the ISA/  
European Patent Office, P.B. 5818 Patenttaan 2  
NL - 2280 HV Rijswijk  
Tel. (+31-70) 340-2040, Tx. 31 651 epo nl,  
Fax. (+31-70) 340-3016

Authorized officer

DOMINGO VECCHIONI, M

## INTERNATIONAL SEARCH REPORT

International application No  
PCT/GB2005/050219

## C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	CHU M ET AL: "Optimality, computation, and interpretation of nonnegative matrix factorizations (Version: October 18, 2004)" [Online] 18 October 2004 (2004-10-18), pages 1-18, XP002468344 Retrieved from the Internet: URL: <a href="http://www.wfu.edu/~plemmons/papers/ch_u_ple.pdf">http://www.wfu.edu/~plemmons/papers/ch_u_ple.pdf</a> [retrieved on 2008-02-06] section 3.1.3	1-17, 19-35, 49-51
A	TROPP J A: "Literature Survey: Non-negative matrix factorization" PREPRINT, UNIVERSITY OF TEXAS AT AUSTIN, [Online] 2003, XP002468345 Retrieved from the Internet: URL: <a href="http://www.acm.caltech.edu/~jtropp/not es/Tro03-Literature-Survey.pdf">http://www.acm.caltech.edu/~jtropp/not es/Tro03-Literature-Survey.pdf</a> [retrieved on 2008-02-07] section "Multiplicative update rules"	1-17, 19-35, 49-51
A	LEE D D ET AL: "Algorithms for non-negative matrix factorization" PROCEEDINGS OF THE 2000 CONFERENCE ON ADVANCES IN NEURAL INFORMATION PROCESSING SYSTEMS, [Online] 2000, XP002468346 Retrieved from the Internet: URL: <a href="http://books.nips.cc/papers/files/nips_13/LeeSeung.pdf">http://books.nips.cc/papers/files/nips_13/LeeSeung.pdf</a> [retrieved on 2008-02-08] cited in the application the whole document	1-17, 19-35, 49-51
T	BERRY ET AL: "Algorithms and applications for approximate nonnegative matrix factorization" COMPUTATIONAL STATISTICS AND DATA ANALYSIS, vol. 52, no. 1, 30 August 2007 (2007-08-30), pages 155-173, XP022222910 ISSN: 0167-9473 section 3	1-17, 19-35, 49-51
A	EP 0 621 578 A (MATSUSHITA ELECTRIC IND CO LTD [JP]) 26 October 1994 (1994-10-26) page 2, line 10 - page 3, line 5 figure 2	18, 36-48
A	WO 2004/001707 A (KONINKL PHILIPS ELECTRONICS NV [NL]; TRAGS ALEXANDER J R [NL]) 31 December 2003 (2003-12-31) page 3, line 27 - page 5, line 24 figures 1,2	18, 36-48
		-/-

## INTERNATIONAL SEARCH REPORT

International application No  
PCT/GB2005/050219

## C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	WO 94/27276 A (MOTOROLA INC [US]) 24 November 1994 (1994-11-24) page 1, line 32 - page 3, line 6 page 6, line 22 - line 31 page 10, line 12 - page 13, line 22 figure 10	18,36-48
E	WO 2006/035248 A (CAMBRIDGE DISPLAY TECH [GB]; SMITH EUAN CHRISTOPHER [GB]; LAWRENCE NIC) 6 April 2006 (2006-04-06) abstract page 23 - page 24; figures 9b,11 page 38, first complete paragraph claims 1-4,14,15,19-23	36,38-48
T	page 10, second last complete paragraph - page 11, second complete paragraph	18,36-48
T	SMITH E C: "Total Matrix Addressing" SID 2007 INTERNATIONAL SYMPOSIUM DIGEST OF TECHNICAL PAPERS, 2007, pages 93-96, XP008088356 the whole document	18,36-48
T	EISENBRAND F ET AL: "Algorithms for longer OLED lifetime" 6TH WORKSHOP ON EXPERIMENTAL ALGORITHMS WEA 2007, LECTURE NOTES IN COMPUTER SCIENCE, vol. 4525, 2007, pages 338-351, XP019060471 ISBN: 978-3-540-72844-3 section 1	18,36-48